

(12) UK Patent Application (19) GB (11) 2 291 117 (13) A

(43) Date of A Publication 17.01.1996

(21) Application No 9412740.4

(22) Date of Filing 24.06.1994

(71) Applicant(s)
Ford Motor Company Limited

(Incorporated in the United Kingdom)

Eagle Way, BRENTWOOD, Essex, CM13 3BW,
United Kingdom

(72) Inventor(s)
Timothy John Bowman

(74) Agent and/or Address for Service
A Messulam & Co
24 Broadway, LEIGH-ON-SEA, Essex, S69 1BN,
United Kingdom

(51) INT CL⁶
F01M 11/00

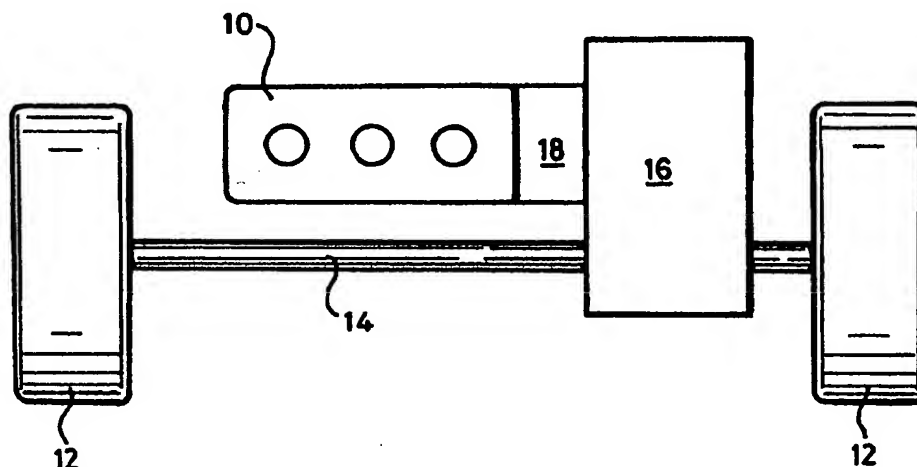
(52) UK CL (Edition O)
F1B B4A B4C
B7H HLD

(56) Documents Cited
GB 1003863 A GB 0926644 A GB 0391279 A

(58) Field of Search
UK CL (Edition M) B7H HLC HLD , F1B
INT CL⁶ F01M 11/00

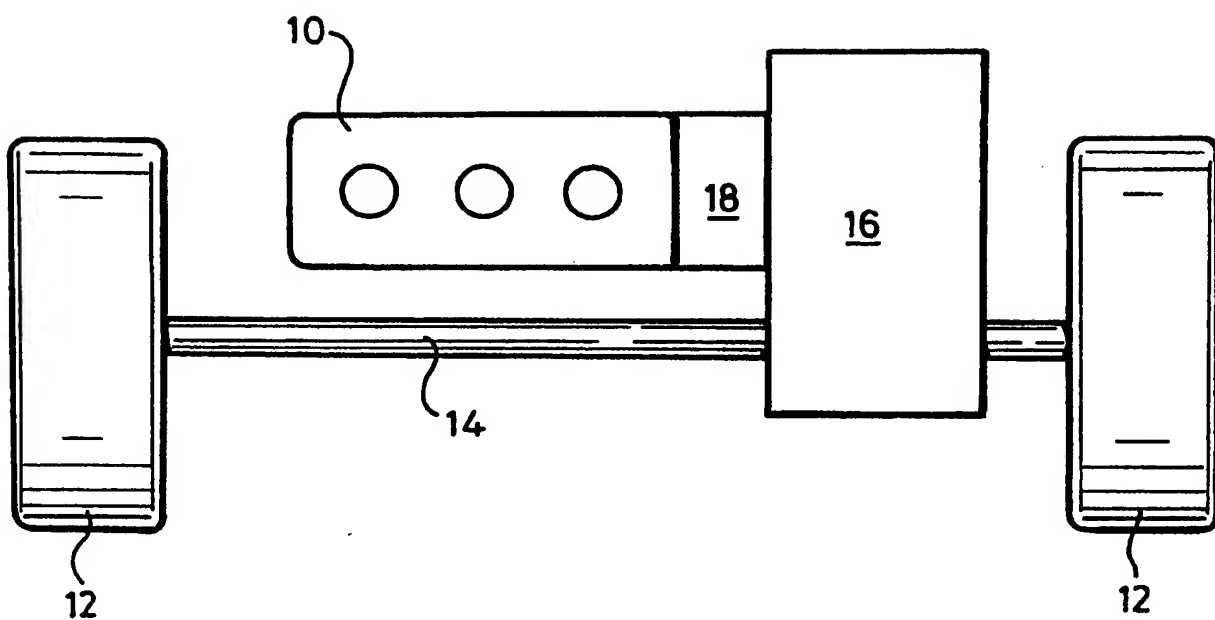
(54) Two-stroke engine installation

(57) The oil tank 18 for providing engine lubricant is arranged between the engine 10 and the vehicle transmission 16. The tank 18 may be a separate rigid component or integrated into the engine block or transmission.



GB 2 291 117 A

1/1



- 1 -

TWO-STROKE ENGINE INSTALLATION

This invention relates to a two-stroke engine installation for use in a motor vehicle.

5

It is conventional for two-stroke engines to have the engine lubrication oil contained in a separate tank or container from where it is fed to the engine by a piping system for delivery to those parts of the engine requiring lubrication.

10

According to the present invention, there is provided a two-stroke engine installation in a motor vehicle, the installation including a two-stroke engine, a transmission and an oil tank mounted to the engine and to the transmission.

15

The oil tank preferably has one end face which is mounted to the engine and an opposite end face which is mounted to the transmission.

20

Oil communication between the oil tank and the engine block can be through mating galleries formed in the end faces of the tank and of the block.

25

The size of the oil tank may be such that the overall length of the engine/transmission assembly is equal to that of a four-stroke engine.

30

The invention will now be further described, by way of example, with reference to the accompanying drawing which is a schematic illustration of an engine installation.

The installation shown in the drawing comprises a three-cylinder engine 10, two road wheels 12 joined by a drive

35

axle 14, a transmission 16 and an oil tank 18.

When the engine 10 is running, its output shaft provides an input to the transmission 16, and the transmission then
5 transmits the power of the engine to produce rotation of the axle 14 and thus to turn the wheels 12.

Conventionally, the engine 10 is mounted directly to the transmission 16, but in this invention, the engine and the
10 transmission are spaced apart by the width of the oil tank 18. The output shaft from the engine traverses the oil tank to provide a drive input to the transmission.

The tank can be a rigid component bolted or otherwise
15 fixed to the engine block and to the transmission, and thereby forming a rigid unit comprising engine, oil tank and transmission. Alternatively the tank could be integrated into the engine block or the transmission housing.

20 This arrangement has a number of advantages.

Firstly, it increases the moment of inertia of the power train by displacing the engine and transmission outwards.
25 This increase in moment of inertia makes it easier to provide adequate engine mounting performance, particularly for a three-cylinder two-stroke engine.

Secondly, positioning the oil tank between the engine and
30 the transmission allows heat from the engine to warm the lubricant in the oil tank and this helps to achieve a rapid rise to engine operating temperature from a cold start.

35 Thirdly, it is possible to internally vent the tank 18

through the engine's breathing system. This avoids the need for extra pipework or components to vent the oil tank.

5 Fourthly, oil flow from the tank to the engine and vice-versa can be through internal drillings in the casing of the oil tank and of the block for the engine 10. No external pipework is therefore required for this purpose.

10 Fifthly, it is conventional practice amongst motor manufacturers to offer the same vehicle body shell with different engine capacities. Where the different engines have different overall physical sizes/arrangements, packaging can present problems.

15 By determining the dimensions of the oil tank 18, it is possible to "lengthen" a three-cylinder two-stroke engine so that its size is generally the same as that of a four-cylinder four-stroke engine, so that both variants can be
20 fitted in the same vehicle with minimum change to mounting systems.

A subsidiary consideration which makes this invention useful in reducing the impact of differences between a
25 two-stroke engine and a four-stroke engine is that the oil filler opening for replenishing the engine oil can, as a result of the positioning of the oil tank 18 between the engine and the transmission be located in generally the same position in the engine compartment as the oil filler
30 opening of a conventional four-stroke engine.

Sixthly, the mounting of the oil tank directly adjacent the engine ensures that the vibration of the engine during operation helps to prevent any settling of the lubricant
35 and promotes homogeneity of the lubricant.

Claims

1. A two-stroke engine installation in a motor vehicle,
the installation including a two-stroke engine, a
5 transmission and an oil tank mounted to the engine and the
transmission.

2. An engine installation as claimed in Claim 1, wherein
the oil tank has one end face which is mounted to the
10 engine and an opposite end face which is mounted to the
transmission.

3. An engine installation as claimed in Claim 1 or Claim
2, wherein oil communication between the oil tank and the
15 engine block is through mating galleries formed in the end
faces of the tank and of the block.

4. An engine installation as claimed in any preceding
claim, wherein the size of the oil tank is such that the
20 overall length of the engine/transmission assembly is
equal to that of a four-stroke engine.

5. A two-stroke engine installation substantially as
herein described with reference to the accompanying
25 drawing.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

5

Application number
GB 9412740.4

Relevant Technical Fields

(i) UK Cl (Ed.M) F1B, B7H HLC, HLD

(ii) Int Cl (Ed.5) F01M 11/00

Search Examiner
R J DENNIS

Date of completion of Search
15 AUGUST 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
1 TO 5

(ii)

Categories of documents

- | | |
|---|---|
| X: Document indicating lack of novelty or of inventive step. | P: Document published on or after the declared priority date but before the filing date of the present application. |
| Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. | E: Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| A: Document indicating technological background and/or state of the art. | &: Member of the same patent family; corresponding document. |

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1003863 (STANDARD)	1
X	GB 0926644 (VEB)	1 and 3
X	GB 0391279 (NEW IMPERIAL)	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).